

Lab 12 - Connecting To PBXs Using Analog Voice Ports

CCNA Voice Lab 12

Connecting To PBXs Using Analog Voice Ports

Lab Objective:

The objective of this lab exercise is for you to learn and understand how to connect to PBX systems in Cisco IOS voice gateways using analog E&M ports

Topic Description:

A PBX is a telephone exchange that serves a particular business or office, as opposed to one that a common carrier or telephone company operates for many businesses or for the general public. E&M is a type of supervisory line signaling that uses DC signals on separate leads, called the E lead and M lead. There are six different types of E&M signaling: Type I through Type V and E&M SDDC5

Lab Difficulty:

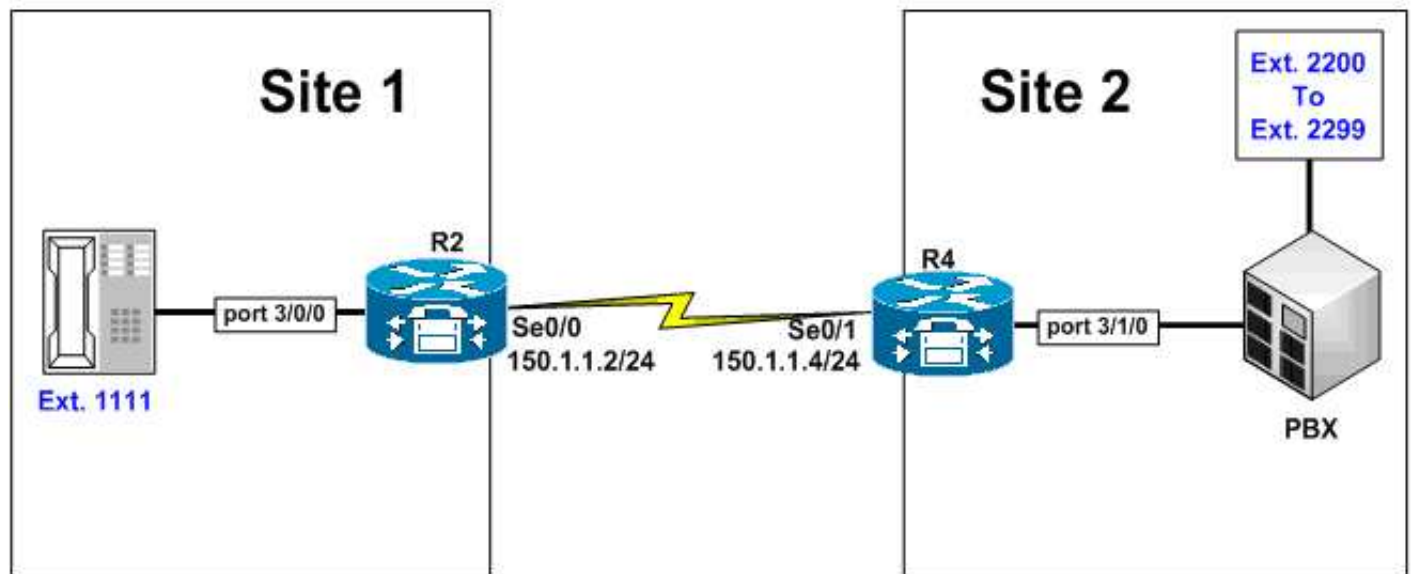
This lab has a difficulty rating of 6/10

Readiness Assessment:

When ready for your exam, you should be able to complete this lab in no more than 15 minutes

Lab Topology:

Please use the following topology to complete this lab exercise:



NOTE: This lab is a configuration verification lab only. There is no physical PBX used in the implementation and completion of this lab.

Lab 12 Configuration Tasks

Task 1:

Configure the hostnames and IP addresses on R2 and R4 as illustrated in the diagram. Configure R4 to provide clocking to R2. Configure the clock rate on R4 as 800Kbps

Task 2:

Configure POTS dial peers for the connected phones on R2 and R4 as illustrated in the diagram. Use any dial peer numbers you want

Task 3:

Configure VoIP dial peers on R2 and R4 for the extensions at either location. Use any dial peer numbers you want

Task 4:

Configure R2 for the E&M connection to the PBX system as follows:

4 Wire Operation

Immediate Start Signaling

E&M Type 5

Lab 12 Configuration and Verification

Task 1:

```
R2(config)#hostname R2
R2(config)#interface Serial0/0
R2(config-if)#description .Connected To R4 Serial 0/1.
R2(config-if)#ip address 150.1.1.2 255.255.255.0
```

```
R4(config)#hostname R4
R4(config)#interface Serial0/1
R4(config-if)#description .Connected To R2 Serial 0/0
R4(config-if)#ip address 150.1.1.4 255.255.255.0
R4(config-if)#clock rate 800000
```

Verify connectivity by performing a simple ping between the two routers

R2#ping 150.1.1.4

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 150.1.1.4, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms

R4#ping 150.1.1.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 150.1.1.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/8 ms

Task 2:

```
R2(config)#dial-peer voice 1 pots
R2(config-dial-peer)#destination-pattern 1111
R2(config-dial-peer)#port 3/0/0
R2(config-dial-peer)#exit
```

```
R4(config)#dial-peer voice 1 pots
R4(config-dial-peer)#destination-pattern 22..
R4(config-dial-peer)#port 3/1/0
R4(config-dial-peer)#exit
```

Task 3:

```
R2(config)#dial-peer voice 2 voip
R2(config-dial-peer)#destination-pattern 22..
```

```
R2(config-dial-peer)#session target ipv4:150.1.1.4  
R2(config-dial-peer)#exit
```

```
R4(config)#dial-peer voice 2 voip  
R4(config-dial-peer)#destination-pattern 1111  
R4(config-dial-peer)#session target ipv4:150.1.1.2  
R4(config-dial-peer)#exit
```

Task 4:

```
R4(config)#voice-port 3/1/0  
R4(config-voiceport)#operation 4-wire  
R4(config-voiceport)#signal immediate  
R4(config-voiceport)#type 5  
R4(config-voiceport)#exit
```

To verify this configuration, use the **show voice port** command:

```
R4#show voice port 3/1/0
```

recEive And transMit 3/1/0 Slot is 3, Sub-unit is 1, Port is 0

Type of VoicePort is E&M

Operation State is DORMANT

Administrative State is UP

No Interface Down Failure

Description is not set

Noise Regeneration is enabled

Non Linear Processing is enabled

Non Linear Mute is disabled

Non Linear Threshold is -21 dB

Music On Hold Threshold is Set to -38 dBm

In Gain is Set to 0 dB

Out Attenuation is Set to 0 dB

Echo Cancellation is enabled

Echo Cancellation NLP mute is disabled

Echo Cancellation NLP threshold is -21 dB

Echo Cancel Coverage is set to 8 ms

Echo Cancel worst case ERL is set to 6 dB

Playout-delay Mode is set to adaptive

Playout-delay Nominal is set to 60 ms

Playout-delay Maximum is set to 250 ms

Playout-delay Minimum mode is set to default, value 40 ms

Playout-delay Fax is set to 300 ms

Connection Mode is normal

Connection Number is not set

Initial Time Out is set to 10 s

Interdigit Time Out is set to 10 s

Call Disconnect Time Out is set to 60 s

Ringing Time Out is set to 180 s

Wait Release Time Out is set to 30 s

Companding Type is u-law

Region Tone is set for US

Analog Info Follows:

Currently processing none

Maintenance Mode Set to None (not in mtc mode)

Number of signaling protocol errors are 0

Impedance is set to 600r Ohm

Station name None, Station number None

Translation profile (Incoming):

Translation profile (Outgoing):

Voice card specific Info Follows:

Operation Type is 4-wire

E&M Type is 5

Signal Type is immediate

Dial Out Type is dtmf
In Seizure is inactive
Out Seizure is inactive
Digit Duration Timing is set to 100 ms
InterDigit Duration Timing is set to 100 ms
Pulse Rate Timing is set to 10 pulses/second
InterDigit Pulse Duration Timing is set to 750 ms
Clear Wait Duration Timing is set to 400 ms
Wink Wait Duration Timing is set to 200 ms
Wait Wink Duration Timing is set to 550 ms
Wink Duration Timing is set to 200 ms
Minimum received Wink Duration Timing is set to 140 ms
Maximum received Wink Duration Timing is set to 290 ms
Minimum seizure Timing is set to 50 ms
Delay Start Timing is set to 300 ms
Delay Duration Timing is set to 2000 ms
Dial Pulse Min. Delay is set to 140 ms
Percent Break of Pulse is 60 percent
Auto Cut-through is disabled
Dialout Delay is 300 ms
Hookflash-in Timing is set to 480 ms
Hookflash-out Timing is set to 400 ms

Final Relevant Configuration R2:

R2#**show running-config**

Building configuration...

Current configuration : 1476 bytes

```
!  
version 12.4  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname R2  
!  
!  
!  
interface Serial0/0  
description .Connected To R4 Serial 0/1.  
ip address 150.1.1.2 255.255.255.0  
no fair-queue  
!  
!  
!  
!  
voice-port 3/0/0  
!  
voice-port 3/0/1  
!  
voice-port 3/1/0  
!  
voice-port 3/1/1  
!  
!  
!  
!  
dial-peer voice 1 pots  
destination-pattern 1111  
port 3/0/0  
!  
dial-peer voice 2 voip  
destination-pattern 22..  
session target ipv4:150.1.1.4
```

session target ipv4:150.1.1.2

Final Relevant Configuration R4:

R4#**show running-config**

Building configuration...

Current configuration : 1519 bytes

!

version 12.4

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname R4

!

!

!

!

interface Serial0/1

description .Connected To R2 Serial 0/0

ip address 150.1.1.4 255.255.255.0

clock rate 800000

!

!

!

!

voice-port 3/0/0

!

voice-port 3/0/1

!

voice-port 3/1/0

operation 4-wire

type 5

signal immediate

!

voice-port 3/1/1

!

!

!

!

dial-peer voice 2 voip

destination-pattern 1111

session target ipv4:150.1.1.2

!

dial-peer voice 1 pots

destination-pattern 22..

port 3/1/0

